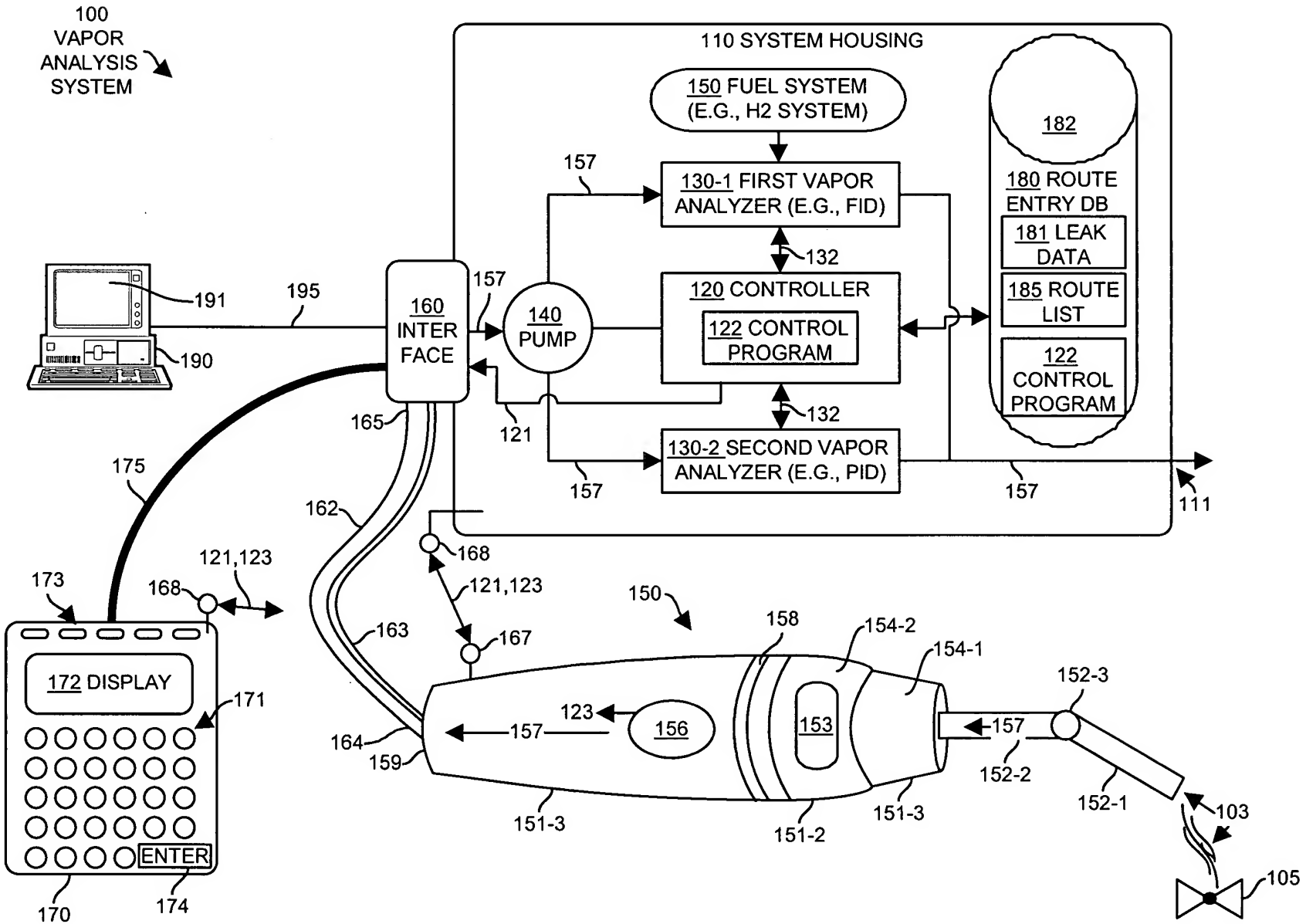
100
VAPOR
ANALYSIS
SYSTEM
110 SYSTEM HOUSING
150 FUEL SYSTEM
(E.G., H2 SYSTEM)
182
180 ROUTE
ENTRY DB
181 LEAK
DATA
185 ROUTE
LIST
122
CONTROL
PROGRAM
130-1 FIRST VAPOR
ANALYSIS (E.G., FID)
120 CONTROLLER
122 CONTROL
PROGRAM
130-2 SECOND VAPOR
ANALYSIS (E.G., PID)
160
INTER
FACE
140
PUMP
191
190
195
157
132
121
165
175
162
168
121,123
173
172 DISPLAY
171
ENTER
170
174
163
167
150
158
154-2
154-1
152-3
153
156
123
164
159
151-3
151-2
152-2
152-1
103
105
111

FIG. 1

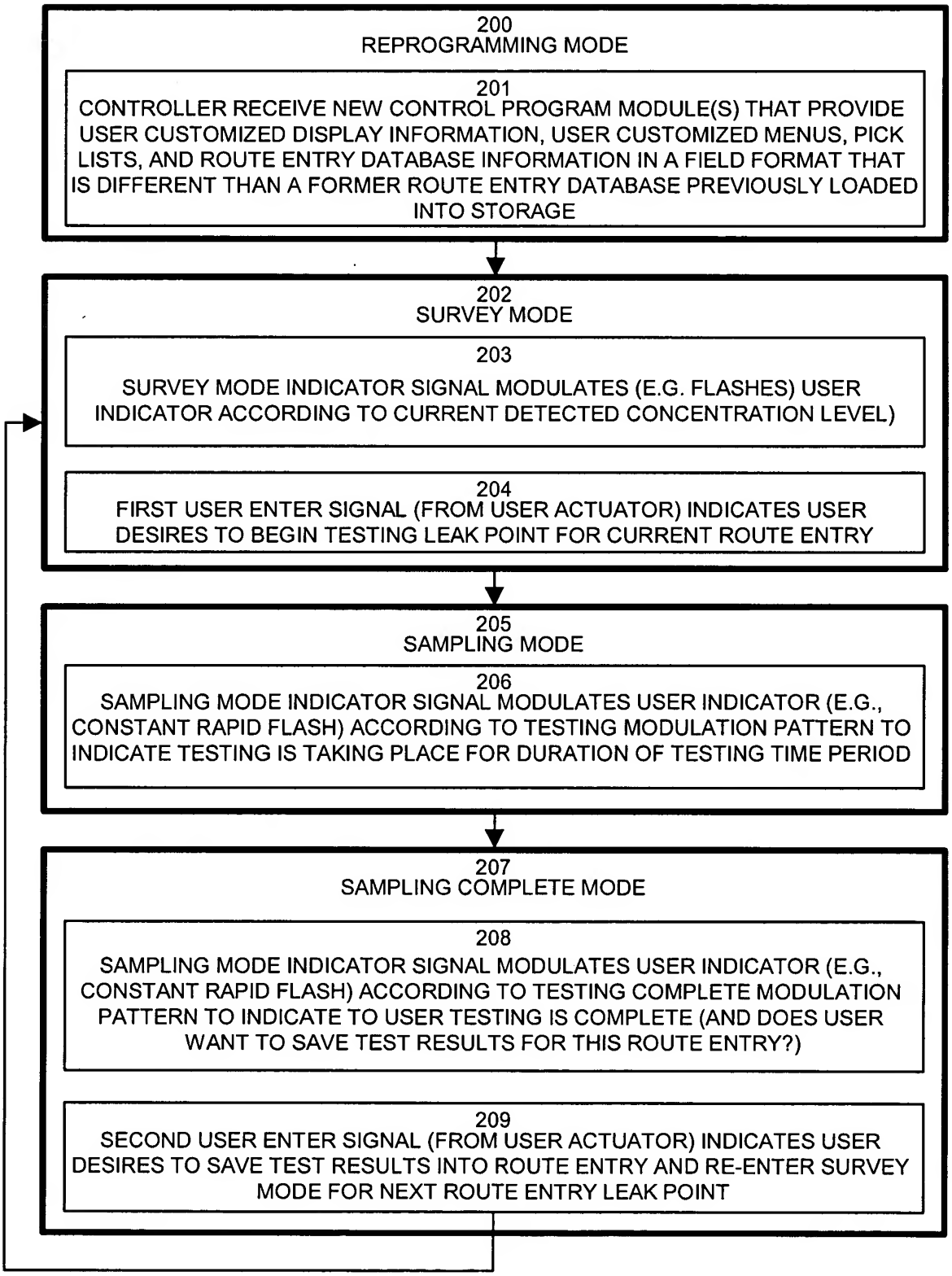
200
REPROGRAMMING MODE
201
CONTROLLER RECEIVE NEW CONTROL PROGRAM MODULE(S) THAT PROVIDE USER CUSTOMIZED DISPLAY INFORMATION, USER CUSTOMIZED MENUS, PICK LISTS, AND ROUTE ENTRY DATABASE INFORMATION IN A FIELD FORMAT THAT IS DIFFERENT THAN A FORMER ROUTE ENTRY DATABASE PREVIOUSLY LOADED INTO STORAGE
202
SURVEY MODE
203
SURVEY MODE INDICATOR SIGNAL MODULATES (E.G. FLASHES) USER INDICATOR ACCORDING TO CURRENT DETECTED CONCENTRATION LEVEL)
204
FIRST USER ENTER SIGNAL (FROM USER ACTUATOR) INDICATES USER DESIRES TO BEGIN TESTING LEAK POINT FOR CURRENT ROUTE ENTRY
205
SAMPLING MODE
206
SAMPLING MODE INDICATOR SIGNAL MODULATES USER INDICATOR (E.G., CONSTANT RAPID FLASH) ACCORDING TO TESTING MODULATION PATTERN TO INDICATE TESTING IS TAKING PLACE FOR DURATION OF TESTING TIME PERIOD
207
SAMPLING COMPLETE MODE
208
SAMPLING MODE INDICATOR SIGNAL MODULATES USER INDICATOR (E.G., CONSTANT RAPID FLASH) ACCORDING TO TESTING COMPLETE MODULATION PATTERN TO INDICATE TO USER TESTING IS COMPLETE (AND DOES USER WANT TO SAVE TEST RESULTS FOR THIS ROUTE ENTRY?)
209
SECOND USER ENTER SIGNAL (FROM USER ACTUATOR) INDICATES USER DESIRES TO SAVE TEST RESULTS INTO ROUTE ENTRY AND RE-ENTER SURVEY MODE FOR NEXT ROUTE ENTRY LEAK POINT

FIG. 2

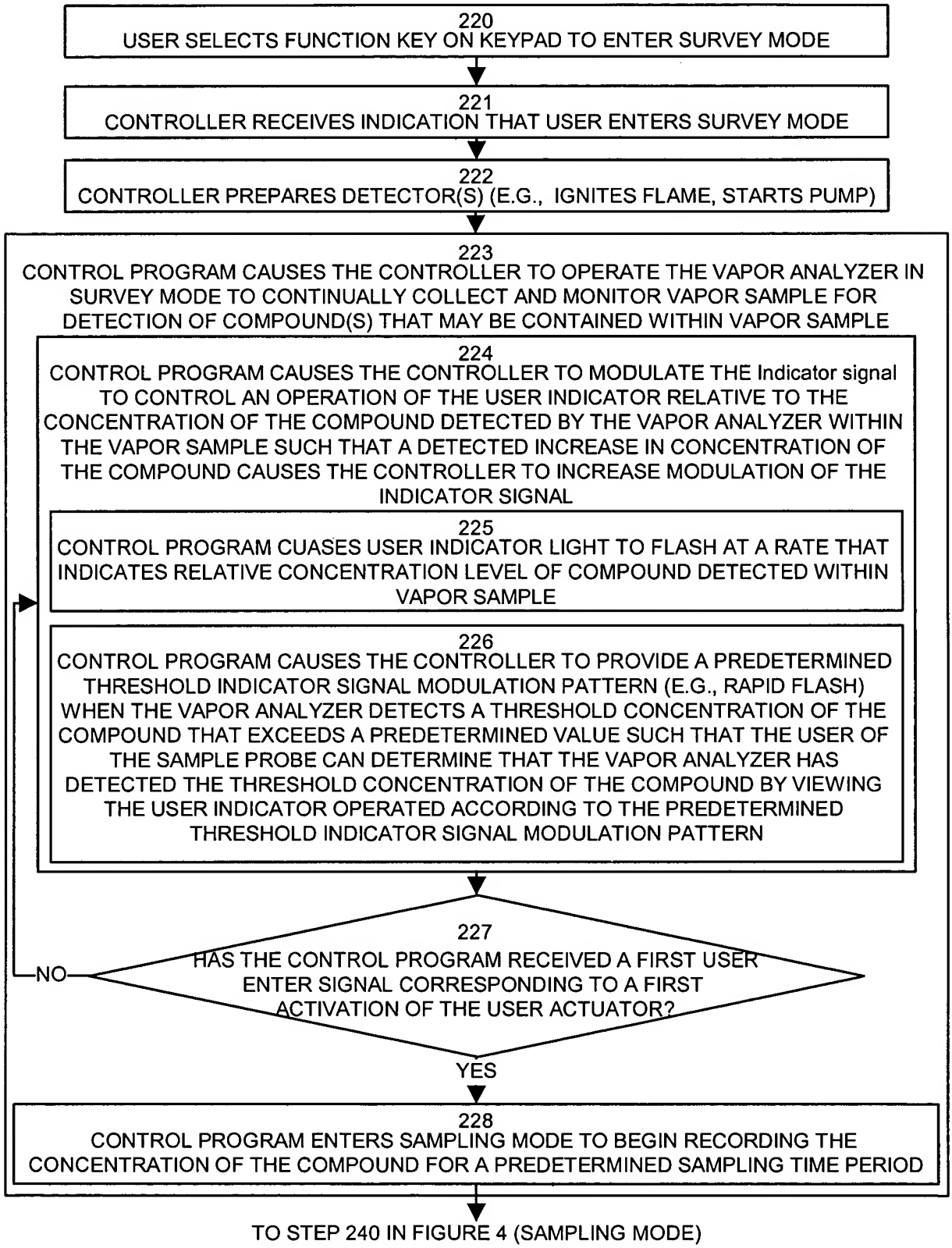
220
USER SELECTS FUNCTION KEY ON KEYPAD TO ENTER SURVEY MODE
221
CONTROLLER RECEIVES INDICATION THAT USER ENTERS SURVEY MODE
222
CONTROLLER PREPARES DETECTOR(S) (E.G., IGNITES FLAME, STARTS PUMP)
223
CONTROL PROGRAM CAUSES THE CONTROLLER TO OPERATE THE VAPOR ANALYZER IN SURVEY MODE TO CONTINUALLY COLLECT AND MONITOR VAPOR SAMPLE FOR DETECTION OF COMPOUND(S) THAT MAY BE CONTAINED WITHIN VAPOR SAMPLE
224
CONTROL PROGRAM CAUSES THE CONTROLLER TO MODULATE THE Indicator signal TO CONTROL AN OPERATION OF THE USER INDICATOR RELATIVE TO THE CONCENTRATION OF THE COMPOUND DETECTED BY THE VAPOR ANALYZER WITHIN THE VAPOR SAMPLE SUCH THAT A DETECTED INCREASE IN CONCENTRATION OF THE COMPOUND CAUSES THE CONTROLLER TO INCREASE MODULATION OF THE INDICATOR SIGNAL
225
CONTROL PROGRAM CUASES USER INDICATOR LIGHT TO FLASH AT A RATE THAT INDICATES RELATIVE CONCENTRATION LEVEL OF COMPOUND DETECTED WITHIN VAPOR SAMPLE
226
CONTROL PROGRAM CAUSES THE CONTROLLER TO PROVIDE A PREDETERMINED THRESHOLD INDICATOR SIGNAL MODULATION PATTERN (E.G., RAPID FLASH) WHEN THE VAPOR ANALYZER DETECTS A THRESHOLD CONCENTRATION OF THE COMPOUND THAT EXCEEDS A PREDETERMINED VALUE SUCH THAT THE USER OF THE SAMPLE PROBE CAN DETERMINE THAT THE VAPOR ANALYZER HAS DETECTED THE THRESHOLD CONCENTRATION OF THE COMPOUND BY VIEWING THE USER INDICATOR OPERATED ACCORDING TO THE PREDETERMINED THRESHOLD INDICATOR SIGNAL MODULATION PATTERN
227
HAS THE CONTROL PROGRAM RECEIVED A FIRST USER ENTER SIGNAL CORRESPONDING TO A FIRST ACTIVATION OF THE USER ACTUATOR?
NO
YES
228
CONTROL PROGRAM ENTERS SAMPLING MODE TO BEGIN RECORDING THE CONCENTRATION OF THE COMPOUND FOR A PREDETERMINED SAMPLING TIME PERIOD
TO STEP 240 IN FIGURE 4 (SAMPLING MODE)

FIG. 3

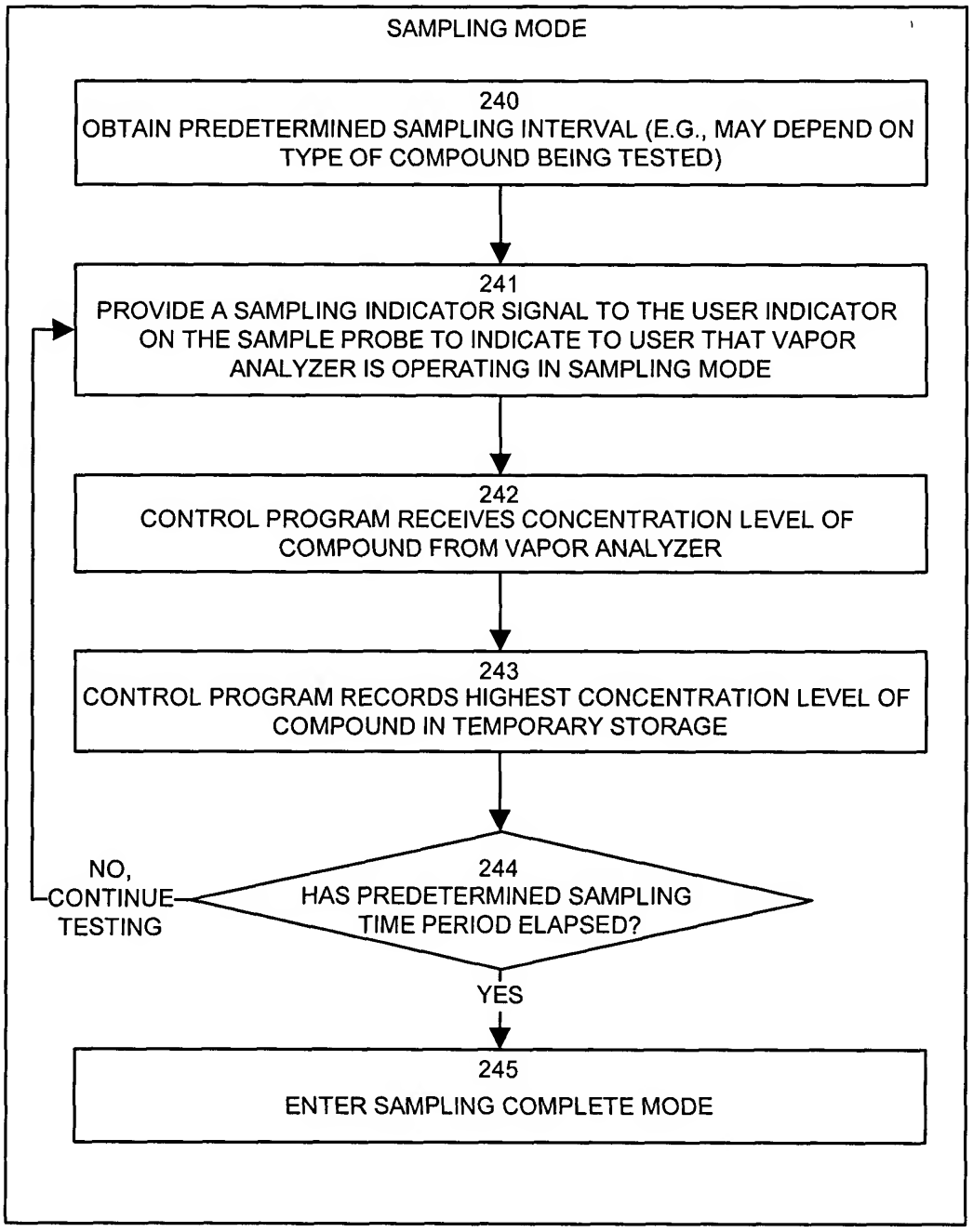
SAMPLING MODE
240
OBTAIN PREDETERMINED SAMPLING INTERVAL (E.G., MAY DEPEND ON TYPE OF COMPOUND BEING TESTED)
241
PROVIDE A SAMPLING INDICATOR SIGNAL TO THE USER INDICATOR ON THE SAMPLE PROBE TO INDICATE TO USER THAT VAPOR ANALYZER IS OPERATING IN SAMPLING MODE
242
CONTROL PROGRAM RECEIVES CONCENTRATION LEVEL OF COMPOUND FROM VAPOR ANALYZER
243
CONTROL PROGRAM RECORDS HIGHEST CONCENTRATION LEVEL OF COMPOUND IN TEMPORARY STORAGE
244
HAS PREDETERMINED SAMPLING TIME PERIOD ELAPSED?
NO, CONTINUE TESTING
YES
245
ENTER SAMPLING COMPLETE MODE

FIG. 4

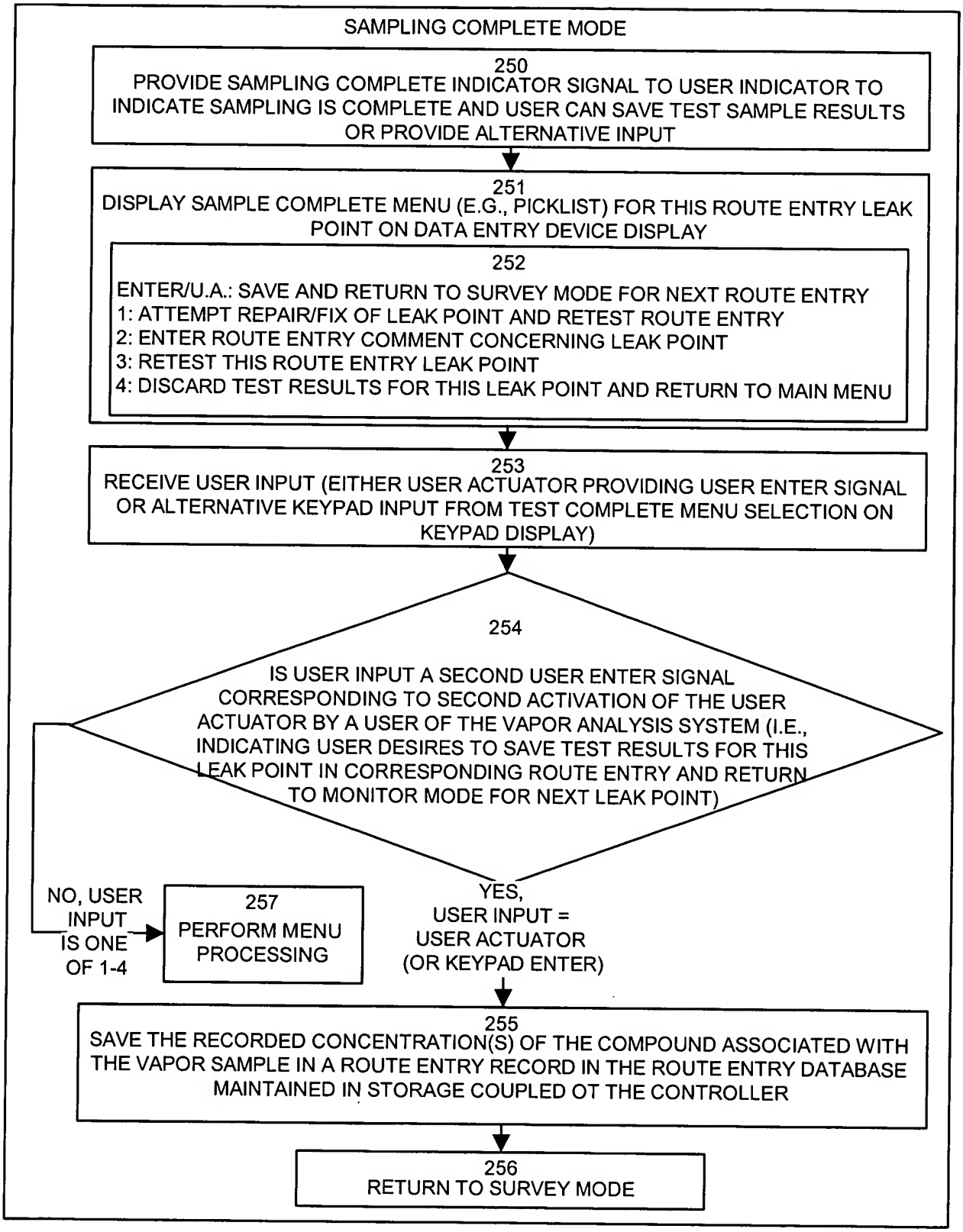
SAMPLING COMPLETE MODE
250
PROVIDE SAMPLING COMPLETE INDICATOR SIGNAL TO USER INDICATOR TO INDICATE SAMPLING IS COMPLETE AND USER CAN SAVE TEST SAMPLE RESULTS OR PROVIDE ALTERNATIVE INPUT
251
DISPLAY SAMPLE COMPLETE MENU (E.G., PICKLIST) FOR THIS ROUTE ENTRY LEAK POINT ON DATA ENTRY DEVICE DISPLAY
252
ENTER/U.A.: SAVE AND RETURN TO SURVEY MODE FOR NEXT ROUTE ENTRY
1: ATTEMPT REPAIR/FIX OF LEAK POINT AND RETEST ROUTE ENTRY
2: ENTER ROUTE ENTRY COMMENT CONCERNING LEAK POINT
3: RETEST THIS ROUTE ENTRY LEAK POINT
4: DISCARD TEST RESULTS FOR THIS LEAK POINT AND RETURN TO MAIN MENU
253
RECEIVE USER INPUT (EITHER USER ACTUATOR PROVIDING USER ENTER SIGNAL OR ALTERNATIVE KEYPAD INPUT FROM TEST COMPLETE MENU SELECTION ON KEYPAD DISPLAY)
254
IS USER INPUT A SECOND USER ENTER SIGNAL CORRESPONDING TO SECOND ACTIVATION OF THE USER ACTUATOR BY A USER OF THE VAPOR ANALYSIS SYSTEM (I.E., INDICATING USER DESIRES TO SAVE TEST RESULTS FOR THIS LEAK POINT IN CORRESPONDING ROUTE ENTRY AND RETURN TO MONITOR MODE FOR NEXT LEAK POINT)
NO, USER INPUT IS ONE OF 1-4
257
PERFORM MENU PROCESSING
YES, USER INPUT = USER ACTUATOR (OR KEYPAD ENTER)
255
SAVE THE RECORDED CONCENTRATION(S) OF THE COMPOUND ASSOCIATED WITH THE VAPOR SAMPLE IN A ROUTE ENTRY RECORD IN THE ROUTE ENTRY DATABASE MAINTAINED IN STORAGE COUPLED OT THE CONTROLLER
256
RETURN TO SURVEY MODE

FIG. 5